

WHAT IS CLAIMED IS:

1. An electrode assembly for solid oxide fuel cells, comprising:

an electrolyte member defining a cathode side and an anode side and having an active area and an edge portion;

a cathode disposed on said cathode side;

an anode disposed on said anode side; and

at least one electrolyte support member positioned adjacent to said edge portion of said electrolyte and having an opening positioned over said active area.

2. The assembly of claim 1, wherein said at least one electrolyte support member comprises a cathode side electrolyte support member positioned adjacent to said cathode side of said electrolyte and an anode side electrolyte support member positioned adjacent to said anode side of said electrolyte.

3. The assembly of claim 1, wherein said at least one electrolyte support member comprises an electrolyte material.

4. The assembly of claim 1, wherein said at least one electrolyte support member is a material having substantially the same CTE as said electrolyte.

5. The assembly of claim 1, wherein said at least one electrolyte support member is laminated to said electrolyte.

6. The assembly of claim 1, wherein said at least one electrolyte support member is bonded to said electrolyte.

7. The assembly of claim 1, wherein said electrolyte has a thickness of less than or equal to about 50 μm .

8. The assembly of claim 1, wherein said electrolyte has a thickness of less than or equal to about 20 μ m.

9. The assembly of claim 1, wherein said assembly further comprises bus bars disposed on said electrolyte defining a bus bar zone, and wherein said at least one electrolyte support member extends over said bus bar zone.

10. The assembly of claim 1, wherein said electrolyte further includes via lines for communicating said anode and said cathode through said electrolyte, and wherein said at least one electrolyte support member includes ribs extending along said via lines.

11. The assembly of claim 10, wherein said at least one electrolyte support member has side members extending along said edge portion, and wherein said ribs extend between opposite side members.

12. The assembly of claim 10, wherein said ribs are laminated to said via lines.

13. The assembly of claim 10, wherein said ribs are bonded to said via lines.

14. The assembly of claim 10, wherein said ribs and said electrolyte support member comprise electrolyte material.

15. The assembly of claim 10, wherein said ribs and said electrolyte support member comprise a material having substantially the same CTE as said electrolyte.

16. The assembly of claim 10, wherein said at least one electrolyte support member has side members extending along said edge portion, and wherein said ribs are provided as a grid extending between said side members.

17. The assembly of claim 16, wherein said grid is defined by a first group of ribs extending between said side members in a first direction and a second group of ribs extending between said side members in a second direction whereby said first group of ribs and said second group of ribs define points of intersection.

18. The assembly of claim 17, wherein said grid is bonded to said cathode side at said points of intersection.

19. The assembly of claim 17, wherein said grid is bonded to said anode side at said points of intersection.

20. The assembly of claim 17, wherein said grid is bonded to said cathode side at areas other than said points of intersection.

21. The assembly of claim 17, where said anode side is bonded to cathode side at areas other than said points of intersection.

22. The assembly of claim 17, wherein said grid is made of wire mesh.

23. The assembly of claim 17, wherein said grid is made of foam.

24. The assembly of claim 17, wherein said grid has an insulating coating.

25. The assembly of claim 17, wherein said grid is made of a material having substantially the same CTE as said electrolyte.

26. The assembly of claim 17, wherein said grid is made of ferritic stainless steel.

27. The assembly of claim 17, wherein said grid is made of zirconia foam.

28. The assembly of claim 16, wherein said electrolyte member comprises a plurality of discrete electrolyte elements and wherein said grid defines a plurality of openings between said ribs, said electrolyte elements being positioned in said openings.